The Logic of the Nuclear Arsenal

Adam Lowther

With the historic election of Barack Obama, the United States is likely to see an equally historic review of nuclear weapons policy. In 2009 alone, the new administration will undertake a nuclear posture review (NPR), expected in early 2010, and oversee the expiration or renegotiation of the Strategic Arms Reduction Treaty (START), which expires 5 December 2009. Mr. Obama will also be responsible for ensuring compliance with obligations in the Strategic Offense Reduction Treaty (SORT), which require that the United States reduce its deployed strategic warheads to between 1,700 and 2,200 by 2012.

During his first week in office, the president gave the nation a glimpse into how he may approach these issues when the White House released his agenda stating the policies he will pursue regarding the nuclear arsenal. Three foci in Mr. Obama's nuclear agenda are apparent: securing loose nuclear material from terrorists, strengthening the Nuclear Nonproliferation Treaty (NPT), and moving toward a nuclear-free world.[1] He expanded on his position in Prague on 5 April 2009. What many Americans may not be familiar with is the rationale advanced by advocates of nuclear abolition as they attempt to persuade Mr. Obama to cut the nuclear arsenal further.

Attempting to influence the administration's nuclear policy are a number of individuals and organizations with very different views of the nuclear arsenal and national security. While imperfect, it is possible to organize this diversity of thought on nuclear issues into two broad groups. On the one hand are the "modernizers," led by a number of prominent military leaders. Over the past several months they have given a number of public speeches and interviews in which they outlined what it will take to maintain and modernize the most advanced and secure nuclear arsenal

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in the world.[2] Their views shaped—and were shaped by—recent reports published by such groups as the Secretary of Defense Task Force on DoD Nuclear Weapons Management, the Defense Science Board, and the US Air Force.[3]

On the other hand, there are the "abolitionists," whose leadership is less clearly defined but whose visible members include think tank analysts, former US senators, and a substantial number of senior faculty at leading universities. While it would be incorrect to suggest that these two groups are adversaries, they do represent differing visions of the nuclear arsenal.

The following pages take a critical look at the often-unchallenged arguments advanced by nuclear abolitionists and attempt to illustrate errors in fact and reasoning that are often made when advocating nuclear abolition. In pointing out the flaws in the abolitionists' position, this article also seeks to provide a better explanation of the position held by nuclear modernizers. Admittedly, successful deterrence—conventional or nuclear—is difficult to prove or disprove, since demonstrating the negative is difficult if not impossible. Thus, this analysis takes a middle ground between the "armchair general," Thomas Schelling, who suggests that deterrence is akin to a logic game, and the area expert who demands deep empirical analysis as a prerequisite to validity.

Nuclear Modernization

The rationale for modernization of the nuclear arsenal is extensively described in a number of DoD reports issued between 2006 and 2008. To summarize, Pentagon leaders highlight three pressing needs.

First, the United States has not developed a new nuclear warhead in more than two decades. According to the Defense Science Board, "Our lack of nuclear weapons production capability—and our stricture against not only development but [also] design—holds our future hostage."[4] Although the current stockpile is regularly maintained, a majority of the warheads in the arsenal were designed and built in the 1970s and early 1980s. This led top policy makers and military leaders to call for the development of a safer and more technologically advanced Reliable Replacement Warhead (RRW) by the year 2000.[5]

Second, the personnel who design and maintain the nuclear stockpile are rapidly approaching retirement. There is an immediate need to find young scientists and engineers willing to dedicate their careers to the

nuclear mission before the knowledge and skills of the present workforce are lost.[6]

Third, the delivery platforms that comprise the nuclear triad are aging without a clear way ahead on their replacements. Efforts to maintain the viability of these platforms are underway, as some of the Minuteman III systems, for example, are periodically modernized through various life extension programs (LEP).[7]

The B-52H, the mainstay of nuclear-capable aircraft, is even older and lacks the capability to penetrate defended airspace.[8] This leaves the 19 B-2 bombers in the fleet as the only nuclear-capable bombers that can penetrate Russian or Chinese airspace,[*] for example, and the recent DoD budget cut funding for the development of the next-generation bomber, leaving some uncertainty as to the future of manned bombers.[9]

America's fleet of 14 ballistic missile submarines (SSBN) is in the best relative condition of the nuclear weapons delivery platforms but is also aging. The oldest Ohio class SSBN, the USS *Henry M. Jackson* (SSBN 730), was commissioned in 1977, while the newest, the USS *Louisiana* (SSBN 743), was commissioned in 1997. A replacement for the Ohio class SSBN is not scheduled to enter service until 2029.[10]

Nuclear Abolition/Minimalism

The renewed appeal of the antinuclear movement coincides with the 4 January 2007 *Wall Street Journal* op-ed piece by George Shultz, William Perry, Henry Kissinger, and Sam Nunn. These seasoned policy experts shocked many with their advocacy of a "world free of nuclear weapons." Their article preceded a number of reports echoing the same sentiments. In the ensuing 18 months, the Arms Control Association, Center for Strategic and International Studies, Nuclear Threat Initiative, American Physics Society, and Sir Richard Branson's newly created Global Zero, have all followed suit with their advocacy of a nuclear-free world.[11] More recently, the November/December 2008 issue of *Foreign Affairs* published "The Logic of Zero" by Ivo Daalder and Jan Lodal, detailing the thoughts of nuclear abolitionists.

[*]The B-1B was originally designed as a nuclear-capable bomber and could serve that purpose again. If converted back to its original mission, the B-1B will add greater penetration capabilities than the B-52H.

There are, however, fundamental problems with "The Logic of Zero" and similar publications. The line of argumentation advanced in this and other articles often provides a dearth of supporting evidence and frequently makes a priori assumptions that are logically inconsistent. In fact, both history and logic would forecast very different outcomes from those posited by Daalder and Lodal.

"The Cold War is Over"

Nuclear abolitionists begin most persuasion efforts by informing the reader that the Cold War is over. By implication, this suggests that Presidents George H. W. Bush, Bill Clinton, and George W. Bush failed to understand the significance of this development. While abolitionists acknowledge that the US nuclear stockpile has declined by more than two-thirds since 1991—declining from more than 24,000 warheads to around 5,000—this is not seen as a shift in nuclear weapons policy.[12]

Such a view is incorrect for three reasons. First, the reduction in deployed strategic warheads called for in the SORT (1,700–2,200) makes an approach to nuclear weapons use reliant on a survivable second strike more difficult. A counterforce targeting strategy is also difficult to sustain, as lower numbers force targeteers to prefer a countervalue strategy. Second, the nuclear arsenal is—at its core—designed to preserve US sovereignty by deterring adversaries from striking the United States. This objective is as valid today as it was during the Cold War. It is logical that aspects of Cold War and post–Cold War nuclear posture look similar. Third, a major shift is apparent when looking at the current force structure. There can be no doubt that the composition of the strategic force is very different today than it was the day the Soviet Union collapsed. For example, the Peacekeeper missile has been retired from service, along with a dramatic reduction in the number of warheads on each Minuteman III. It is also worth noting that the fleet of Minuteman IIIs and B-52s is far smaller than a generation ago. These reductions in the strategic force demonstrate that political and military leaders were aware of a changing strategic environment.[13] With the perfect vision that hindsight provides, it is easy to criticize previous administrations, but to dismiss the shifts in policy they carried out is unjustified.

"It's All about Terrorism"

The second argument made by abolitionists suggests that "In today's war waged on world order by terrorists, nuclear weapons are the ultimate means of mass devastation."[14] It is then suggested that the United States must disarm to encourage the remaining nuclear weapons states to follow suit—as will those states developing nuclear weapons. With nation-states disarmed, there will be no place for terrorists to acquire fissile material which they can use to construct a nuclear bomb for use against the United States.

The logic of this view is problematic for several reasons. First, there is a lack of evidence to support such an assertion. History does not provide a wealth of occasions in which analogous efforts led to similar results. To the contrary, American nuclear disarmament is likely to be viewed by some countries as American weakness and an opportunity to accomplish foreign policy objectives absent American interference. The failure of the 1922 Washington Naval Treaty disarmament efforts after World War I played an important role in the remilitarization of the Axis Powers in the 1930s and left the United States unprepared for World War II.[15] Utopian views of a world without war left the United States open to attack and played a role in events leading to the outbreak of World War II.

The wave of localized conflicts that followed the end of the Cold War may be indicative of a world free of nuclear weapons and the restraint they engender.[16] Extended deterrence plays an important role in mitigating conflict by giving America's allies the confidence that the United States is protecting them while also serving as a warning to adversaries. Absent such an umbrella, stability may decline.

Second, to support the abolitionist position, readers are persuaded that American conventional capabilities are a substitute for nuclear weapons. The Bush administration's "New Triad" was partially built on this view. This leads to a logical conclusion that conventional and nuclear forces generate the same strategic effect. But, if this is true, conventional forces are also a threat to stability and must also be reduced or eliminated. In fact, there is little reason to believe that the world will be more stable without nuclear weapons but with an overwhelming US conventional capability. Because America's adversaries know they cannot match US conventional capabilities, nuclear weapons may become an even more attractive option. Fear of US conventional capabilities is a driving force behind nuclear weapons programs in North Korea and Iran, not the fear of America's nuclear arsenal.[17]

Conventional and nuclear weapons are different—very different. If this were not the case, why is 9 August 1945 the last time that a nuclear weapon was used in war? The same cannot be said of conventional weapons. As Ellen Collier of the Congressional Research Service illustrated in 1993, rarely did a year go by during the Cold War that US troops were not engaged in a conventional conflict.[18] The same is true of the post–Cold War period.

India's response to the 26–29 November 2008 Mumbai terrorist attack is a good example of the moderating effect nuclear weapons have on the behavior of nuclear-armed adversaries. Prior to developing nuclear weapons, India and Pakistan fought one another in the First Kashmir War (1947), the Second Kashmir War (1965), and the Indo-Pakistani War (1971), along with numerous artillery exchanges in Kashmir over the decades. Lashkar-e-Taiba's attack left 172 innocent civilians dead and placed the Indian government under great pressure to respond with force, yet Prime Minister Singh has shown tremendous restraint that can be attributed to the fear of a conventional conflict escalating to nuclear war. While India would likely win a conventional war with Pakistan, neither country is willing to take such a risk.[19] These two rivals are not the only examples of the moderating influence of nuclear weapons. The Cold War provides the single best example of nuclear weapons preventing conventional conflict among great-power rivals. While it is only possible to speculate, the probability of a conventional conflict between the United States and the USSR would likely have been much higher had both sides not possessed nuclear weapons.

Moving to 1,000

While the ultimate desire of abolitionists is the complete elimination of nuclear weapons, some are more modest in their immediate objectives, offering 500–1,000 as the right number of deployed strategic nuclear warheads. They do not, however, explain why this is the appropriate number, other than to say, "This would be more than enough to convince anyone that the United States possesses the capacity to respond to any use of nuclear weapons with devastating effect."[20] While the current number of 1,700–2,200 established in the Moscow Treaty (2002) was taken from a Pentagon study on post–Cold War requirements for an effective deterrent, it was, in many ways, an arbitrary number.[21] It was later explained in the *National Security and Nuclear Weapons in the 21st Century* report (2008), published by the Secretaries of Defense and Energy. Here it is said that 1,700–2,200 is the correct size of the operationally deployed strategic

nuclear arsenal because it represents "the ability of the operationally deployed force, force structure, and the supporting nuclear infrastructure to meet a spectrum of political and military goals."[22] The report also suggests that "contemporary force sizing is guided by the fact that the DoD infrastructure for strategic forces and the National Nuclear Security Administration (NNSA) nuclear warhead production infrastructure, even if both are fully functional, may not be capable of responding as rapidly as needed to some kinds of unforeseen operational or technical problems, or to address adverse changes in the geopolitical environment."[23]

Picking an arbitrary number (500–1,000) is not an optimum approach to sizing the nuclear arsenal. Instead, the size, delivery systems, and manner of deployment should be based on current and future threats and American capabilities. If the threat posed by nuclear adversaries increases, it may be necessary to increase the nuclear arsenal. If the international environment stabilizes, it may be possible to reduce the arsenal. But, as history demonstrates, it is far more difficult to increase the size of the arsenal than to reduce it. Thus, a floor may be appropriate for the number of warheads and delivery vehicles.

Most important, the United States must always pay careful attention to maintaining a credible nuclear deterrent, which encompasses more than the possession of nuclear weapons. Even with 500–1,000 warheads, as the abolitionists suggest, the United States may not possess a credible nuclear deterrence, particularly when there are no vital interests at stake. There is no one-to-one ratio between warheads and credibility with an increase in warheads leading to a proportional increase in credibility. It is, however, difficult to develop a more effective way of undermining American credibility than to

- arbitrarily reduce the size of the nuclear arsenal,
- reduce the triad to a monad, and
- stop investing in the modernization of warheads and delivery systems.

In the aftermath of nuclear arms reductions, America's adversaries are likely to continue their current modernization programs or begin new weapons development, as North Korea and Iran are doing to counter US conventional capabilities. Allies protected by American extended deterrence may view an arsenal of 500–1,000 strategic nuclear weapons as a sign that the United States cannot and will not fulfill its obligations to defend them. A new era of proliferation among advanced industrialized nations may

be the result. Britain and France have long maintained a hedge against the failure of extended deterrence and, as of late, both are contemplating nuclear modernization programs.[24] Japan may become the next ally to develop its own nuclear weapons capability as American numbers and credibility decline.[25] Rather than encouraging disarmament, the United States may inaugurate a new era of nuclear proliferation if it continues to disarm.

Perhaps it is time to develop a rational process by which the nation determines the appropriate number of deployed and reserve warheads. To arrive at a better approximation, the following seven questions should be answered:

- What are the threats facing the United States and its allies?
- What are the objectives of America's adversaries?
- How do nuclear weapons contribute to deterrence?
- Is a countervalue or counterforce strategy more appropriate?
- How survivable are US nuclear forces?
- What targets should be held at risk and by what delivery platform?
- What are the consequences of being wrong?

While there are certainly more variables to consider, answering these questions begins to provide some structure for determining the appropriate size and delivery method for the nuclear arsenal.

To bolster support for a 500- to 1,000-warhead stockpile, abolitionists often point out that terrorism, not the Soviet menace, is the threat facing the nation. While it is true that terrorism is the most immediate threat, it does not threaten the sovereignty of the United States. The very fact that America's adversaries must resort to terrorism is a sign that the United States has achieved success in dominating nuclear and conventional operations. Since they do not threaten national sovereignty, terrorists should always be preferred to peer competitors.

"The Logic of Zero" says nothing of a current or future nuclear threat posed by Russia, China, North Korea, or Iran. Gestures of peace from the United States rarely elicit the desired response. This is particularly true of the relationship between the United States and Russia, dating back to Stalin's betrayal of Roosevelt in Poland and Eastern Europe after World War II.[26] This was not the last time an agreement was violated. As the Arms Control Association has noted, the Soviet Union, and now Russia,

have a history of violating the Biological Weapons Convention, making it difficult to place much faith in a future agreement on nuclear disarmament.[27] American distrust of Russia is well founded and illustrated in the 1992 Bush administration decision to maintain a large nuclear stockpile as a hedge against a return to authoritarianism.[28] Recent developments in Russian politics give reason for concern and may signal the rise of illiberal democracy and the end of the Russian bear's hibernation.[29]

Russia considers its nuclear arsenal vital to its national security for three reasons. First, possession of nuclear weapons is prestigious. It should not be forgotten that the Soviet Union was once the largest empire on Earth—a fact most Russians have not forgotten. Second, Russian nuclear weapons deter the United States from intervening in Russian affairs, such as the recent conflict with Georgia. Third, nuclear weapons deter a feared "Chinese expansion" into eastern Siberia, which the Russian army cannot otherwise deter or repel.[30] To suggest that Russia will follow the United States in disarming is to suggest that President Medvedev and Prime Minister Putin will alter their recent behavior. This is unlikely.

Accidental Detonation, Miscalculation, and Nuclear Proliferation

The next line in the abolitionist argument focuses on the potential for accidental detonation, miscalculation leading to a nuclear holocaust, and proliferation. While it is true that these risks exist, in the 60-year history of the bomb there has never been an accidental detonation, much less a nuclear holocaust.

To suggest that these events are inevitable is ahistorical. Current nuclear controls separate arming codes from weapons handlers and launch officers until a presidential decision is made and require multiple levels of verification before a weapon can be armed and released. The high level of security that currently exists would be heightened even more if the United States were to continue development of the RRW, which modernizers have advocated for a number of years. This is also true of current modernization efforts in Russia and China.[31]

Additionally, American and Russian ICBMs have been detargeted, demonstrating a reduction in the level of tension between the two nations.[32] Thus, it is accurate to say that American ICBMs no longer sit on "launch on warning" status.[33] Most important, the notion that ICBMs sit on a "hair trigger" alert is not correct and never was. Thus, from a technical

perspective, the probability of rapid cataclysmic miscalculation leading to a nuclear holocaust is highly improbable.

With more than 60 years of experience with nuclear weapons, there is also a low probability of political miscalculation. Neither the president of the United States nor his counterpart in Moscow has ever "miscalculated" and launched a nuclear weapon. Rather than expecting miscalculation, a better approach may be to assist other nuclear powers in developing the sound practices that have led to six decades of American and Russian restraint.

Finally, it is not in the immediate interests of any state, including Iran, to transfer nuclear material and know-how to violent Islamic fundamentalists. To the contrary, it is in Iran's interest to ensure that groups such as Hezbollah have a limited capability for waging war. An authoritarian regime (e.g., Iran or Syria) would find it contrary to its own interests and survival to create/support nonstate actors capable of toppling an adversary (Israel) because that capability could then be turned against the original benefactor. Much as Saddam Hussein was careful to limit assistance to terrorist groups because he feared they could turn against him,[34] Iran has limited its assistance to Hezbollah.[35]

As the Nuclear Threat Initiative suggests in its recent work, the potential for proliferation, particularly in Russia, is on the decline as Russia improves controls over key items and personnel.[36] And, as the United States continues to improve its nuclear forensics capability—ensuring that the world knows of its capacity to track material—adversaries, both state and nonstate, will face an increasing level of risk should they desire to launch a covert nuclear attack against the United States.

Among nuclear powers, Pakistan presents the greatest proliferation risk. This risk was mitigated by former president Pervez Musharraf, who was successful in establishing positive control over Pakistan's nuclear stockpile.[37] As a result of the discovery of A. Q. Khan's illicit trafficking network, security measures were substantially improved.[38] Contrary to what some may think, a nuclear Iran would likely pose less of a proliferation risk than Pakistan. With a stable central government and a long history of working with terrorist organizations, the Iranian political elite are experienced with internal security. And, while they may be professed enemies of the United States, the Iranian regime does not seek its own destruction.

Luck

Finally, the abolitionists justify the lack of a nuclear holocaust by pointing out that "responsible nuclear stewardship, a relatively effective nonproliferation regime, and a good deal of luck have helped account for this achievement. But the world cannot continue to count on luck."[39] As with the previous points, evidence to substantiate America's reliance on luck is lacking. If past successes are the result of luck, how much more will the United States rely on luck once it disarms? Should the United States disarm, it will no longer be able to lay claim to Vegetius' dictum, "*Si vis pasem para bellum*" ("If you desire peace, prepare for war").

Moving Beyond Criticism of Nuclear Abolition

If the modernizers are to persuade the president, a skeptical Congress, and the American people that a safe, modern, and reliable nuclear arsenal is needed, they must begin by directly addressing the arguments of nuclear abolitionists. Relying on unengaging technical reports to make the case is not a strategy for success. Instead, four mutually reinforcing approaches may offer a viable opportunity to preserve the nuclear arsenal while also accomplishing legitimate nonproliferation objectives.

First, the United States remains a representative republic where the American people have the single most important voice in determining public policy. Modernizers would be wise to engage Americans to inform them about deterrence and nuclear weapons policy. One effective way to accomplish this objective would be for senior leaders and scholars in the modernization camp to work with major media outlets by supporting journalists who seek to understand nuclear weapons operations and policy, publishing articles in major newspapers and Web sites, and appearing on television and radio regularly to discuss the issue. Turning complex issues into brief and informative columns can be an effective tool. Where abolitionists appeal to emotion, modernizers must appeal to reason. The importance of winning the support of the American people should never be underestimated. After all, it is their security that modernizers seek to preserve and their money that funds the nuclear arsenal.

Second, Congress responds to the demands of its constituents. If modernizers effectively sway American public opinion, individual members of the House and Senate will respond by supporting DoD efforts to build and maintain a safe, secure, and modern nuclear arsenal. Indirect effort is, however,

not enough. An active effort should be undertaken to educate the military legislative assistants of each member of Congress. Rather than focusing on POM and program issues, a broader understanding of deterrence strategy and nuclear weapons should be the target of educational efforts. Success will depend on persuading congressional leaders with strong factual arguments that overcome the emotional and speculative arguments of abolitionists.

Third, modernizers must work to convince the president of the continuing importance of the nuclear arsenal to national security. In any new administration, the realities of office soon overcome the rhetoric of the campaign. As with the American people and the Congress, success will be determined by the strength of the argument presented to the president.

Finally, every effort should be made to find potential common ground with abolitionists. While it is highly unlikely that they will be persuaded of the utility of the nuclear arsenal, there are areas where collaboration is possible. As in the past, the United States and advocates of modernization can support international efforts to assist in nonproliferation efforts, such as maintaining an effective command and control system in all nuclear weapons states, improving fissile material and nuclear stockpile security, and other such measures.

Pursuing a course of action that is grounded in a rational approach to US national security and supported by both theory and practice should prove successful, but it will require modernizers to vigorously defend their efforts. The alternative, however, is to allow the dreams of nuclear abolitionists to put the security of the American people at risk. That is unacceptable.

Perhaps it is the awe generated when watching footage of nuclear test detonations or the striking images of Hiroshima and Nagasaki that engender respect and restraint. Perhaps it is the fear of radiological aftereffects of a nuclear explosion that drive human emotions regarding nuclear weapons. Whatever the case, nuclear weapons have a deterrent effect that cannot be recreated by conventional capabilities. Absent nuclear weapons and a credible place in the national strategy, the United States will lose much of its ability to provide some stability in an unstable international system. SSQ

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